

chester, *Scirpus americanus*, *Potamogeton pectinatus*, *Sagittaria heterophylla*, and *Eleocharis diandra*. The vegetation of the Merrimac Valley has not been carefully investigated from this point of view and it is possible that we might have here plants limited in their distribution to the former extent of the Post-Pleistocene sea. However, a reconnaissance of the Lake Champlain region, the St. Lawrence Valley, and eastern New Brunswick in the summer of 1923, did not bring to light any indication of the survival of maritime plants in regions clearly covered by the Champlain submergence.

(To be continued.)

SOLIDAGO ALTISSIMA L.

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As is known, we have in the eastern United States one group of strongly stoloniferous goldenrods characterized by triple-nerved leaves to which belong the species now appearing in our botanies as *Solidago canadensis* L. and *Solidago altissima* L., and another group of strongly stoloniferous goldenrods characterized by not having triple-nerved leaves, to which group belongs the species now appearing in our manuals as *Solidago rugosa* Mill.

Now, some time before he published his work *Hortus Upsaliensis* in 1748, Linnaeus grew in the gardens at Upsala, Sweden, two species of American goldenrods. The first species, which later became the primary basis for his *Solidago canadensis*, was especially characterized by "foliis trinerviis."

The second species, which five years later became the primary basis for his *Solidago altissima*, was described as follows:

"2. SOLIDAGO paniculato-corymbosa, racemis reflexis, floribus adscendentibus, foliis enerviis integerrimis.

"Virga aurea altissima serotina, panicula speciosa patula.

Martyn. hist. 14. t. 14.

"Habitat in *Malandia* [should be *Marilandia*].

"Hospitatur, *sub dio*, perennis.

"Obs. *Praecedenti valde affinis a qua differt*: 1. *Foliis crassioribus, margine vix vel parum scabris, superficie vix manifeste trinervi.* 2. *Caule duplo altiore, seu quadrupedali.* 3. *Tempore florendi seriore, scilicet octobri.*" Linnaeus *Hort. Ups.* 259. 1748.

It will be noted that he particularly emphasized the fact that the leaves were “superficie vix manifeste trinervi” and that the plant was twice as tall as the first species and was a late-flowering plant.

Five years later, in publishing *Solidago altissima*, he amplified his description and remarks as follows:

“3. SOLIDAGO paniculata-corymbosa, racemis recurvis, floribus adscendentibus, foliis enerviis subintegerrimis. *Hort. ups.* 259.

“Virga aurea altissima serotina, panicula speciosa patula. *Mart. cent.* 14. t. 14.

“*Habitat in America septentrionali* 2.

“*Habitus praecedenti simillimus, diversus magnitudine, tempore florendi, serraturis nervisque foliorum; caeterum eadem commiscet plantas vix genuinas, forte hybridas, ut vix limites reperiatis. Itaque conferantur.*

“Virga aurea novae angliae altissima, paniculis nonnunquam reflexis. *Boerh. lugdb.* 1. p. 97.

“Virga aurea americana hirsuta, radice odorata. *Dill. elth.* 410. t. 304. f. 391.

“Virga aurea novae angliae, rugosis foliis crenatis. *Dill. elth.* 406. t. 308. f. 392.

“Virga aurea americana aspera, foliis brevioribus serratis. *Dill. elth.* 411. t. 305, f. 392.

“Virga aurea marilandica, spicis florum racemosis, totiis¹ integris scabris: *Mart. cent.* 13. t. 13.”

Linnaeus *Sp. Pl.* 2: 878. 1753.

And later (*Sp. Pl.* (Ed. 2) 2: 1233. 1760) he changed the word “subintegerrimis” to “serratis.”

In arriving at a proper conclusion as to the proper use of the name *Solidago altissima* we must, of course, always bear in mind that Linnaeus had before him not only an actual specimen, but had grown the plant he named in the gardens at Upsala. Under such circumstances, if he cited plates from other authors representing some other species, his name must be applied to the plant he had before him and not to any other plant.

The plant so described by Linnaeus was, for about a hundred years, identified with the plant which has more recently been called *Solidago rugosa* Mill. Then very unfortunately, Dr. Asa Gray noticed that Martyn's plate fourteen cited by Linnaeus was not the plant to

¹ The word “totiis” is a misquotation for “foliis.”

which the name *Solidago altissima* was being applied. Thereupon, he announced (Proc. Am. Acad. **17**: 177. 1882) that the name *Solidago altissima* must be treated as a synonym of the other species of Linnaeus, *Solidago canadensis*, stating that "the true original of the Linnaean species is the "plant of Martyn's His. Pl." represented by an excellent plate."¹ He entirely passed over the fact that Linnaeus expressly declared that his *Solidago altissima* had "foliis enerviis" as compared with the "foliis trinerviis" of his other species. He properly emphasized the fact that the plates doubtfully referred to *Solidago altissima* by Linnaeus should not be controlling, but he failed to consider that all of these plates except Martyn's plate 13 emphasized the statement of Linnaeus that he was dealing with a plant not possessing "foliis trinerviis," as none of them except Martyn's plate 13 illustrate plants with three-nerved leaves.

Following this article by Dr. Gray, the unfortunate *Solidago altissima* L. was reduced to synonymy and there remained for a number of years. Then Prof. M. L. Fernald (RHODORA **10**: 91-2. 1908) proceeded correctly to identify Martyn's plate with a very widely distributed plant with triple-nerved leaves but with fairly large sized heads, and contrasted it with another widely distributed plant with triple-nerved leaves and small heads to which he restricted the name *Solidago canadensis*. On the basis of this identification he used the name *Solidago altissima* for the former plant. He quoted some of the remarks of Linnaeus, but, for some reason unknown to me, failed in any way to allude to the fact that Linnaeus described *Solidago altissima* as not having triple-nerved leaves; and failed to allude to the long continued use of the name by numerous botanists for the plant which he has called *Solidago rugosa*.

In the Linnaean herbarium there is much confusion about the specimens of *Solidago altissima*. One sheet is a mixture of *Solidago ne-*

¹ The history of the Linnaean *Solidago canadensis* is curiously similar to that of *Solidago altissima*. It was primarily based on a plant cultivated at Upsala, and in describing it, Linnaeus cited "Virga aurea angustifolia, panicula speciosa canadensis. Pluk. alm. 389 t. 236 f. 1." He took his name from this Plukenet citation and it is the "true original of the Linnaean species" (*Canadensis*) just as much or just as little as the Martyn plate is the "true original" of *Solidago altissima*. Nevertheless, Gray said: "The Syn. Pluk. Alm. t. 236, fig. 1, which may have suggested the specific name, is to be excluded." (Proc. Amer. Acad. **17**: 177. 1882). Then he identified the Plukenet figure with *Solidago odora* Ait. (Syn. Fl., **1**²: 151. 1884.) Following the course adopted with *Solidago altissima*, he should have used the name *Solidago canadensis* for *Solidago odora*. As I have indicated I do not think the course followed with *Solidago altissima* was correct, nor do I think that the Plukenet figure represents *Solidago odora*.

moralis, *S. bicolor* and *S. odora*. Another "ticketed by Linnaeus 'altissima' is noted, apparently by Smith's hand, as '*S. Canadensis*,' but it probably is not" (Gray, Proc. Am. Acad. 17: 177. 1882).

A very interesting sheet, however, exists, the significance of which Gray failed to recognize. He says, "a specimen ticketed '*serotina*' by Linnaeus, and by Smith '*altissima*' is the species which has so long passed as *S. altissima*; viz, *S. rugosa* Mill." (Gray, l. c.). Turning again to the Linnaean description of *S. altissima*, it is to be noted that he particularly dwelt on the species being a very tall one and also a late-flowering one. Martyn also used both the words "*serotina*" and "*altissima*" in connection with his plant. Linnaeus named his species "*altissima*," probably both from his own description and from Martyn's name. It may, therefore, be hazarded that he had first named it "*serotina*" both from his own description and Martyn's name, and that he failed to change his herbarium sheet. It will be recalled that he never published any "*Solidago serotina*" and the only sheet in his herbarium which fully answers his description of *Solidago altissima* is the one marked by him *Solidago serotina* and noted by Smith as *Solidago altissima*. It will be recalled too, in this connection, that *Solidago bicolor* appears in his herbarium as *Solidago discolor*.

I am sure that Gray's statement that "Linnaeus did not well know his species of *Aster* and of *Solidago*" (Proc. Am. Acad. 17: 168. 1882) is most emphatically a correct statement. Both his *S. canadensis* and his *S. altissima* are mixtures, and his herbarium is a very sad mixture. In his conception of *Solidago altissima* he first had mixed in some plant with entire leaves, either *Solidago odora* or the Martyn plate 14. As shown, he himself gradually eliminated this and his final description is a consistent one.

It seems evident then that *Solidago altissima* should again be used as it was for about a century before 1882; namely, for the species which has of late been appearing in our botanies as *Solidago rugosa* Mill.

Solidago hirsutissima Miller Gard. Dict. Ed. 8 (*Solidago* No. 15) 1768 is I believe the name to be used for the plant which has lately been appearing as *Solidago altissima* L.

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